- Micro Economics — The individual view of economics between producers and ~~sup~~ Consumers.

- Total value of = Goods + Services
  the economy (57% of GDP)

- All of us are consumers, but not all of us are producers.

- Entrepreneurs are the real producers, not their employers.

- Employers — i) Skilled   ii) Semi-skilled   iii) Unskilled

- Return on = Profits generated
  Investment (ROI)   Investment sought

The three problems that we witness all the time ~~is~~ are:

i) Limitedness of ~~Be~~ Resources

ii) Unlimitedness of Wants

iii) Maximize wellness with Limited Resources (a decision of a rational mind).

Two schools of thought in Economics:

☞ Quantifying Utility: Cardinal Measure

Consider a salesman offering bottles of water

1st — ₹5   i) Utility is quantitative in nature.

2nd — ₹2   ii) Utility is additive.

3rd — ₹1   Utility is not necessarily the MRP of a product, it is a quantity that shows your willingness to buy it and answers the question, "How much can you pay for this?"

4th — 0

$TU = ₹8$ $MU = \dfrac{\Delta TU}{\Delta c}$ $\left\{ MU_{(2)} = \dfrac{7-5}{1} = 2 \right\}$
(Total Utility)   (Marginal Utility)

↳ change in unit

Endo-utility model — suggests that humans

- Law of Diminishing MU— The tendancy of the consumer is to ~~t~~ that with increase in consumption of a single product, ~~titi~~ marginal utility successively decreases (decrease in want).

👍 **Ordinal Measure of Utility**

- Utility may not be quantified cardinally.
- Also, if a measure can be made on commodity, then ~~marginal~~ cardinal quantification needs to apply on money as well (imagine barter exchanges). Eg., A single product may pose different utilities for different sectors of the society. The same applies to money - More wealth, lesser utility (want for money?; Less wealth, more utility (want for money).
- In cardinal measure, marginal utility of money is assumed constant.

→ Law of Equimarginal Utility - When two commodities have the same marginal utility, the consumer just cannot ~~to~~ make a choice.

Assumptions of Ordinal Measure

i) Diminishing Ordinal Rate of Substitution

At these points, the consumer wishes to buy the product at the prices—x, y— and hence, is indifferent. Therefore, it is called indifference curve / • isoutility curve (locus of points generating the same utility).
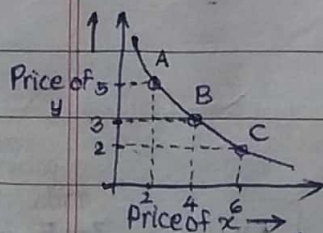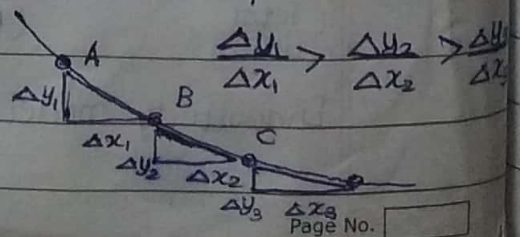
Marginal Rate of Substitution—Rate at which one commodity substitutes the other.

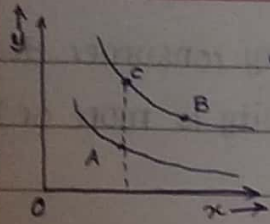Three ~~two~~ properties :: a. Negative slope

b. Convex to the origin

c. Two indifference curves never intersect.

$\dfrac{\Delta u}{\Delta x_1} > \dfrac{\Delta u_2}{\Delta x_2} > \dfrac{\Delta u}{\Delta x}$

Price of y (y-axis): A, B, C points at 5, 3, 2; Price of x (x-axis): 2, 4, 6

d. Higher the IC (farther from origin), higher will be the level of utility. ∴ Utility (C > A).

By transitive argument, Utility (C = B)

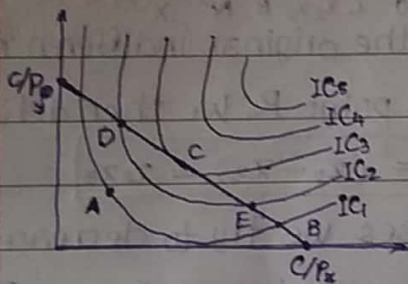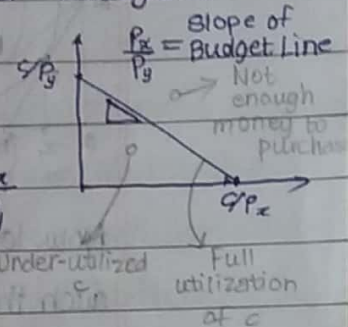⇒ Utility (A = B).

Until this time, we have never discussed budget.

Let the consumer have money c.

$C = X P_x + Y P_y$ → per-unit price of y

$X = \dfrac{C}{P_x} - \dfrac{Y P_y}{P_x}$ $Y = \dfrac{C}{P_y} - \dfrac{X P_x}{P_y}$

No. of Y commodities

Slope of $\dfrac{P_x}{P_y}$ = Budget Line

Not enough money to purchase

C/P_x

Under-utilized   Full utilization of c

• At points C, D and E — Full Budget Utilization

• Utility increases from IC_1 to IC_5.

IC_5
IC_4
IC_3
IC_2
IC_1

∴ C is the Point of Consumer Equilibrium (Point of tangency where utility at minimum budget is maximum)

i) $MRS_{x,y} = \dfrac{P_x}{P_y}$

Keeping every consideration same, and changing only c (income)

Income Consumption Curve — Locus of points that a consumer spends at a certain level of income for the best utility.

Increasing Income (c)

Engel Curve — The curve better plotted by taking Income vs Equilibrium quantities of x.

I (Income)

or budget
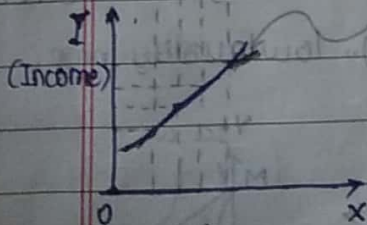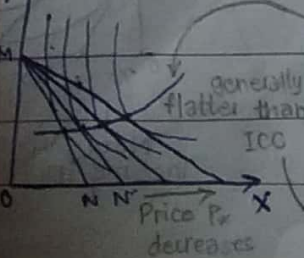
Suppose income (c) remains the same, but P_x changes, then we get the

Price Consumption Curve

Change in price can have two effects:

generally flatter than ICC

a. Price income effect — Price ↓ makes you feel like Income ↑

Price P_x decreases, purchasing much more quantities of X → the steeper part means that X reaches satuation ⇒
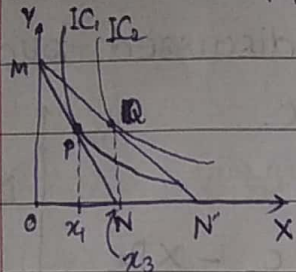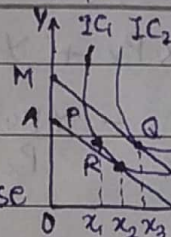
b. Substitution effect – Intuitively, every consumer desires a commodity that is cheaper if the quality is more or less the same.

Hicksian Approach

Due the decrease in Price P_x, the price effect

$$PE = (x_1 - x_3) = x_1 x_3 \quad \{P \to Q\}$$

→ Now, budget line AB touches IC_1 at another point different from P. (R is new consumer's equilibrium)

Now, let the income decrease such that you come back to the original indifference curve IC_1 tangent at another equilibrium point R. We then define the term Income effect $\boxed{IE = -(x_2 - x_3) = x_2 x_3}$

• In real life, if income decreases we try to decrease consumption (X) as much as possible (alternatively both X and Y). Hence, the consumption decreases dist unproportionally.
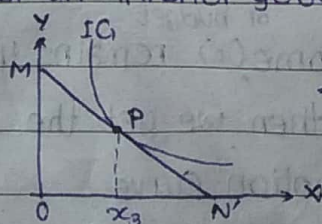
Also, Substitution effect

$$SE = PE - IE = x_1 x_3 - x_2 x_3$$
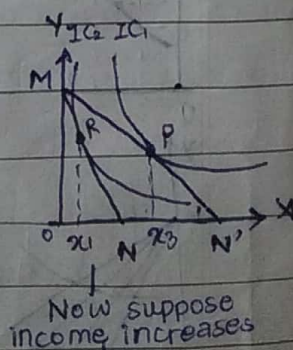
$$\boxed{SE = x_1 x_2}$$

This is the Hicksian approach to Income decrease.

• Normal goods — Consumption of normal goods increases with an increase in income. E.g., luxuries.

• Inferior goods — Consumption of inferior goods decreases with an an increase in income. E.g., low quality rice.

For an inferior good,

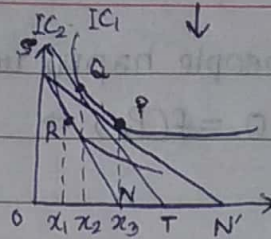Suppose price of commodity decreases / Consumption increases

Now suppose income increases

$\therefore PE = x_1 x_3$ (Consumption ↑)

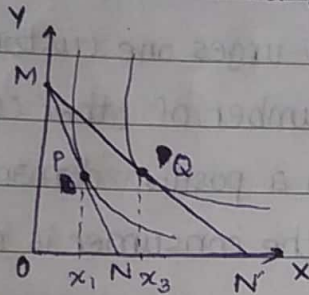$IE = x_1 x_2$ (Income ↑)

$SE = x_2 x_3$

Slutsky's Approach

- The first two steps remain the same (Given case → ~~decrease~~ *increase* in price of commodity)

Now, consider that income decre-ases to such a value that the budget line passes through the initial consumer's equilibrium (P).
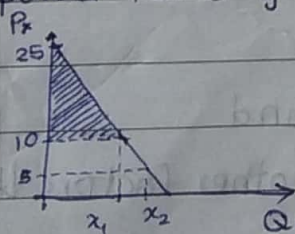
This means the consumer is free to purchase at the same rate as at P, but it is not the point of tangency to the respective indifference curve.
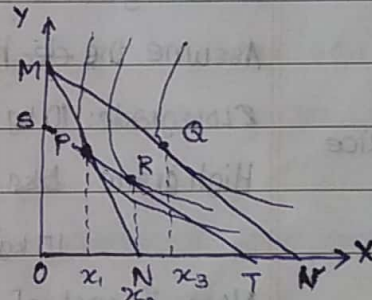
$PE = x_1 x_3 \qquad \cancel{IE = x x_2}$

Demand and Supply

- Demand — The number of units of a commodity that can be purchased by a consumer with a particular purchasing power for a given market price of the commodity.

     ~~Sha~~ Higher prices ⇒ Lesser number of people are ready to buy (based on purchasing power).

- Lower prices ⇒ More consumers (consumers with low purchasing power, and consumers with high PP ready to buy commodities at a lesser price).

- Shaded Area → Consumer's ~~Welfare~~ (lower prices keep Surplus

measures public welfare

people happy unlike a game of Monopoly).

$$Q_x = f(P_x) \Rightarrow Q_x = a - bP_x$$

$$Q_x = aP_x^{-b}$$

$$Q_x = \left(\frac{a}{P_x + b}\right)^c \qquad \text{where } a, b, c > 0$$

Exceptions to Demand Curve

- Commodities whose price rise urges one customer to purchase to that causes a large number of other consumers to purchase too. This results in a positive demand curve slope.
- To buy a gift or soveneir, the consumer is not bothered by the product's cost.
- Giffen goods

of rice

Assume the de household demand, is 15kg and has around ₹30.

Rice

Low grade: 10 kg @ ₹15/-		150
High grade: 5kg @ ₹30/-		150
15 kg		₹300

Now, if cost of low grade rice becomes ₹17, what to do?

Best solution —

12 kg	@ ₹17/-	204
3 kg	@ ₹30/-	90
15 kg		₹294

∴ Even after increase of cost, the demand of low grade rice has increased.

$$Q_x = f(P_x)$$

At a long time period, the demand

$$Q_x = f(P_x, \ldots)$$ What are the other factors that influence the demand?

$$Q_x = f(P_x, I, P_c, s, t, \ldots)$$

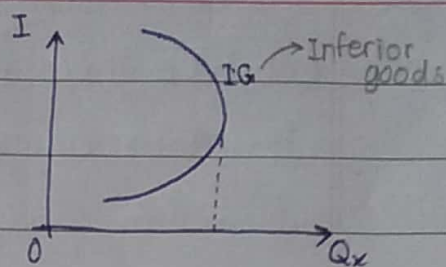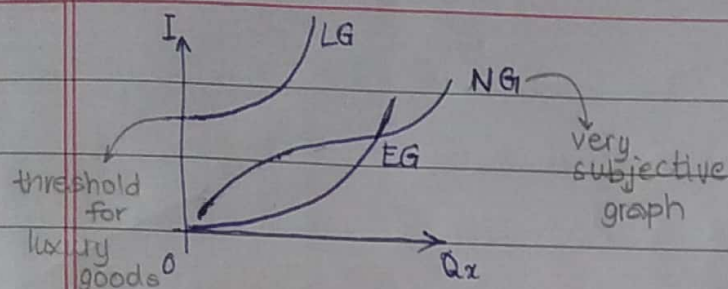Demand of product x
Income

Price of product

Income of consumer

Price of Complement/Supplement

→ taste and preferences

I ↑ LG

NG

threshold
for
luxury
goods

EG

Q_x

very
subjective
graph

I ↑

IG → Inferior
goods

0

Q_x

- When income is low, consumer buys IG. As income increases, consumption increases until a limit. With further increase, demand of IG decreases due to substitution with EG/NG.

- Normal goods are goods between essential and luxury goods.
- The demand increases with income for both essen EG and NG.

Demonstration Effect

☞ Bandwagon – has positive effect on the demand. If a first customer buys a product (to maybe to increase social status), everyone else follows. Here, we can quite clearly observe a bandwagon.

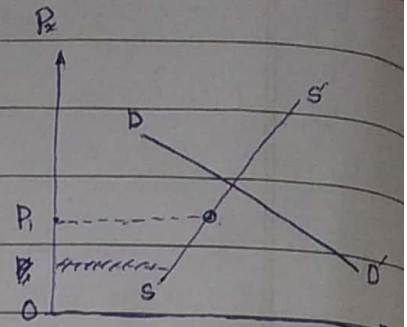☞ Snob – has negative effect on the demand. One customer's view dissuades other consumers from purchase.

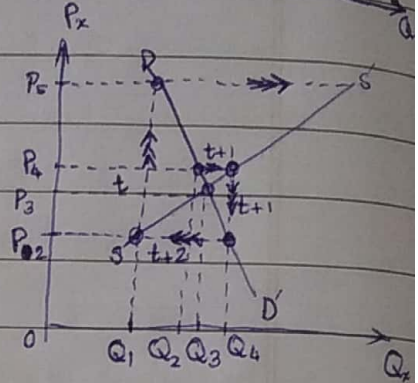$q_t = \text{...} q^s (P_{t-1})$
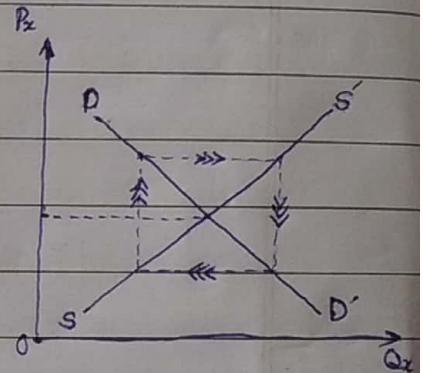
$P_t = P^D(q_t)$

Cob Web Theorem

→ For stable equilibrium in dynamic economy ~~equilibrium~~ (slope of demand curve is less than supply curve).

→ For unstable equilibrium in a dynamic economy (supply curve slope is less than demand curve slope).

→ Oscillating equilibrium in dynamic economy ~~equilibrium~~ (slopes of demand and supply curve are equal).

Elasticity

It is the responsive~~ness of~~ ~~demanded to~~ a particular commodity at demanded by its price, with respect to any of its determinants
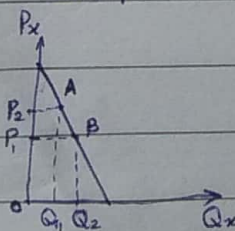
Price elasticity demand

$$e_p = \frac{\% \text{ Change in Quantity Demanded}}{\% \text{ Change in Price of same commodity}}$$

$$= \frac{\Delta Q/Q}{\Delta P/P} = \left(\frac{\Delta Q}{\Delta P}\right) \cdot \left(\frac{P}{Q}\right)$$

Inference:
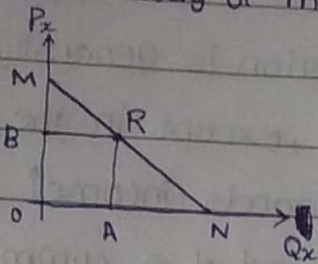
e_p sensitivity of demand of a commodity w.r.t price

• Measuring arc elasticity has a few problems. Instead, we can use derivatives

$$\Rightarrow \quad e_p = -\frac{dQ}{dP} \cdot \left(\frac{P}{Q}\right)$$
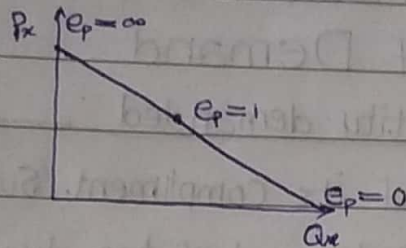
to represent a positive relation

Another way of measuring e_p,

$$e_p = -\frac{dQ}{dP} \cdot \frac{P}{Q}$$

$$= \frac{AN}{RA} \cdot \frac{RA}{OA} = \frac{AN}{OA} = \frac{AN}{BR} = \frac{RN}{MR}$$

$$e_p = \frac{\text{Lower segment}}{\text{Upper segment}}$$
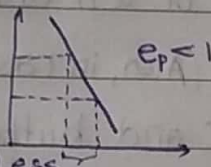
e_p	Elasticity
0	Perfectly inelastic
$(0, \cancel{0.5})$	Highly inelastic
$\cancel{1/2}$	Normally elastic
$(1/2, \infty)$	Highly elastic
∞	Perfectly elastic

$e_p < 1$
Less
Highly elastic
(great price sensitivity)
low
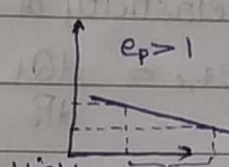
$e_p > 1$
Highly
Less elastic
(low price sensitivity)
high

- In the presence of close substitutes, price sensitivity is very elastic.
- Type of commodity governs its elasticity.
- If commodity consumes a small proportion of your income, price elasticity is low.
- If re-adjustment to price increase is quick, price elasticity is low.

→ Total Revenue (TR) = $P \times Q$ Average Revenue (AR) = $\frac{PQ}{Q}$

→ π (Net Revenue) = TR − TC (Total Cost) $= P$

→ Marginal Revenue (MR) $= \frac{dTR}{dQ}$

$$MR = \frac{d(PQ)}{dQ} = P + Q\frac{dP}{dQ}$$

$$= P\left(1 + \frac{Q}{P}\left(\frac{dP}{dQ}\right)\right)$$

$$= P\left(1 - \frac{1}{e_p}\right)$$

$$MR = AR\left(1 - \frac{1}{e}\right)$$

Income Elasticity

$$ei = \frac{dQ}{dM} \cdot \frac{M}{Q}$$

· The relation is generally positively inclined, except in the case of inferior goods (income↑, demand↓)

· It is used to estimate the demand of a commodity with income (also representative of time).

Cross Elasticity of Demand

$$e = \frac{\% \text{ Change in Quantity demanded}}{\% \text{ Change in Price of its Compliment/Substitute}}$$

· E.g., The cross elasticity of demand of tea due to coffee is given as:

substitutes → $e > 0$
Compliment → $e < 0$

$$e_{t,c} = \frac{dQ_t}{dP_c} \cdot \frac{P_c}{Q_t}$$

(Also, in case of bread and butter) compliment

Price Elasticity of Supply

Instead of quantity ~~su~~ demanded, we observe the change in quantity supplied with change in price.

$$e_p = \frac{dQ}{dP} \cdot \frac{P}{Q}$$

Production

· The process in which a raw material/input ~~to~~ is converted to a finished goods causing value addition, is known as production.

· Short run — Depending on level of output, fixed inputs remains same but variable ~~outputs~~ in outputs change.

· Long run — ~~Depend~~ Almost all inputs are variable.